

CLAIMS:

1 1. A method for use in a layer 2 tunneling protocol (L2TP) sender, the method
 2 comprising the steps of:
 3 sending packets directed to an L2TP peer; and
 4 initiating a recovery process upon detection of multiple messages from the L2TP
 5 peer that the L2TP peer is still waiting for a prior transmitted packet.

1 2. The method of claim 1 wherein the multiple messages are negative
 2 acknowledgements.

1 3. The method of claim 1 wherein the initiating step includes the step of sending a
 2 packet that includes a "Reset *Sr*" (*R-bit*) indicator for resetting a next received sequence
 3 number, *Nr*, value at the L2TP peer.

1 4. A method for use in a layer 2 tunneling protocol (L2TP) sender, the method
 2 comprising the steps of:
 3 receiving a packet from an L2TP peer, the received packet including a next
 4 received sequence number, *Nr*; value;
 5 determining if the *Nr* value represents a negative acknowledgement; and
 6 if a predetermined number of such negative acknowledgements have been
 7 received, initiating a recovery process with the L2TP peer.

1 5. The method of claim 4 wherein the recovery process includes the step of
 2 sending a packet that includes a "Reset *Sr*" (*R-bit*) indicator for resetting a next received
 3 sequence number, *Nr*, value at the L2TP peer.

1 6. A method for use in a layer 2 tunneling protocol (L2TP) sender, the method
 2 comprising the steps of:
 3 sending packets directed to an L2TP peer; and
 4 initiating a recovery process upon detection of either multiple messages from the
 5 L2TP peer that the L2TP peer is still waiting for a prior transmitted packet, or if a
 6 predetermined payload time-out occurs with respect to the prior transmitted packet.

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1 7. The method of claim 6 wherein the multiple messages are negative
2 acknowledgements.

1 8. The method of claim 6 wherein the initiating step includes the step of sending a
2 packet that includes a "Reset *Sr*" (*R-bit*) indicator for resetting a next received sequence
3 number, *Nr*, value at the L2TP peer.

1 9. A packet interface for use in forming a layer 2 tunneling protocol (L2TP)
2 sender, the packet interface comprising:
3 a communications interface for sending packets directed to an L2TP peer; and
4 a processor for initiating a recovery process upon detection of multiple messages
5 from the L2TP peer that the L2TP peer is still waiting for a prior transmitted packet.

1 10. The packet interface of claim 9 wherein the multiple messages are negative
2 acknowledgements.

1 11. The packet interface of claim 9 wherein the processor sends a packet that
2 includes a "Reset *Sr*" (*R-bit*) indicator for resetting a next received sequence number, *Nr*,
3 value at the L2TP peer as part of the initiated recovery process.

1 12. A packet interface for use in forming a layer 2 tunneling protocol (L2TP)
2 sender, the packet interface comprising:
3 a communications interface for receiving a packet from an L2TP peer, the received
4 packet including a next received sequence number, *Nr*; value; and
5 a processor for determining (a) if the *Nr* value represents a negative
6 acknowledgement; and (b) if a predetermined number of such negative acknowledgements
7 have been received, initiating a recovery process with the L2TP peer.

1 13. The packet interface of claim 12 wherein the processor sends a packet that
2 includes a "Reset *Sr*" (*R-bit*) indicator for resetting a next received sequence number, *Nr*,
3 value at the L2TP peer as part of the initiated recovery process.

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